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Linear alignment of InGaAs quantum dots on nominal GaAs(001) surfaces DONG JUN KIM, ADDISON EVERETT, HAEYEON YANG, Utah State University, NANO-PHOTONICS TEAM — We report linear alignment of quantum dots (QDs) by direct deposition on smooth surfaces. A single deposition of InGaAs with 37% indium was carried out on a smooth GaAs(001) surface using molecular beam epitaxy (MBE) after a $1\mu\text{m}$ thick GaAs buffer, which was grown at 580° to get a flat surface. The substrate was then cooled down to the InGaAs growth temperature, 500°C . *In-situ* scanning tunneling microscopy (STM) confirmed that the buffer surface was smooth with well ordered 2×4 reconstruction. STM images of the dots show that they are aligned along a terrace edge line as shown while these dots are aligned along the dimer row direction but not along a step edge. The lines in the contour plot indicate the terrace edges and separate terraces with height difference of one monolayer. The effect of growth parameters on linear alignment of self-assembled quantum dots will be discussed.

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